

R E M A R K S

Claims 1 to 3 and 10 as set forth in Appendix II of this paper remain pending in this case. Claims 7 and 11 to 17 have been canceled as indicated in the Listing of Claims set forth in Appendix I of this paper in light of the Examiner's final restriction requirement.

Claims 1 to 3 and 10 stand rejected under 35 U.S.C. §103(a) as being unpatentable in light of the disclosure of **GB 922,459** when taken in view of the teaching of **Wu et al.** (US 5,338,814).

In the rejection, the Examiner inter alia provides that "Page 8 of '459 teaches a process for the ...."<sup>1)</sup>. It is respectfully submitted that **GB 922,459** consists of only 5 pages and does not comprise a page 8. Due to the discrepancy, applicants assume that the Examiner intended to cite **GB 922,457** rather than **GB 922,459** as the primary reference. Pending that applicants' assumption is correct, it is to be noted that the prior record does not indicate that the Examiner relies in her rejection on a disclosure which differs from the reference identified in the rejection. Accordingly, withdrawal of the finality of the latest Office action is deemed equitable to provide applicants with a full opportunity to address the rejection which the Examiner apparently intended to raise, rather than the rejection which was raised by the Examiner. Favorable action is solicited.

The following remarks are therefore made with regard to a rejection based on the the disclosure of **GB 922,457** when taken in view of the teaching of **Wu et al.** (US 5,338,814) under the assumption that the Examiner intended to cite **GB 922,457** as the primary reference in the rejection under Section 103(a).

**GB 922,457** relates to graft copolymers and a process for preparing them. More particularly, **GB 922,457** provides for a process wherein a solid polyalkylene glycol or a derivative thereof<sup>2)</sup> is dissolved in at least one monomer such as vinyl esters and esters of acrylic acid and methacrylic acid, and the monomers are grafted to the solid

---

1) Page 4 of the Office action of September 23, 2003, lines 2 et seq.

2) Applicants herein adopt the practice of **GB 922,457** and refer to the polyalkylene glycols and their derivatives collectively as "polyalkylene glycols"; ie. page 1, indicated lines 59 to 63, of **GB 922,457**.

polyalkylene glycol in homogeneous phase in the presence of a free radical polymerization catalyst and/or under the action of light<sup>3)</sup>.

According to the teaching of **GB 922,457** the polyalkylene glycols are readily soluble in the monomers which are to be grafted onto the polyalkylene glycols<sup>4)</sup>. Moreover, **GB 922,457** provides that the polymerization is preferably conducted in the homogenous phase without the addition of solvents<sup>5)</sup>. In the examples representing the preparation of the graft copolymers, **GB 922,457** illustrates that the polymerization is conducted by initially preparing a solution of the monomer(s), the solid polyalkylene glycol(s), and the free radical polymerization catalyst. A part of the initially prepared solution is heated to start the free radical polymerization, and the remainder of the solution is subsequently added to the reaction mixture over a period of time to conclude the polymerization<sup>6)</sup>.

Applicants' process differs from the process disclosed in **GB 922,457** due to applicants' requirement that the polymerization is conducted by adding to the monomer and the polyether (I) a solution of a free-radical initiator in a liquid polyethylene glycol having a molecular weight between 88 and 1000.

The Examiner contends that it was obvious for a person of ordinary skill in the art to modify the teaching of **GB 922,457** in the manner which is necessary to arrive at applicants' process in light of the teaching of **Wu et al.** which provides for a radical initiated homopolymerization of polyvinylpyrrolidone. The homopolymerization of polyvinylpyrrolidone in accordance with the teaching of **Wu et al.** is conducted in the presence of a chain transfer agent, and the chain transfer agent utilized in the process of **Wu et al.** is polyethylene glycol having a molecular weight of about 300. Additionally, **Wu et al.** teach that the chain transfer agent may be included in the initial reaction mixture of vinylpyrrolidone, water and free radical initiator, or may be added during the polymerization with a second charge of radical initiator.

The Examiner relies particularly on the explanations provided by **Wu et al.** in col. 1, indicated line 34, to col. 2, indicated line 61, of **US 5,338,814**, that a chain transfer agent functions by terminating

---

3) For example page 1, indicated lines 55 to 69, of **GB 922,457**.

4) For example page 1, indicated line 70 et seq., of **GB 922,457**.

5) For example page 2, indicated lines 17 to 24, of **GB 922,457**.

6) Note page 4, indicated line 60, to page 8, indicated line 23, of **GB 922,457**.

the growing chain by providing a more labile hydrogen atom to the growing chain, and that the chain transfer agent hinders the growth of high molecular weight of molecules and reduces the breadth of the molecular weight distribution due to the "more labile hydrogen atom" (*emphasis added*). The Examiner contends that the respective explanation of *Wu et al.* provides a person of ordinary skill in the art with the motivation to apply the radical initiator in the process of *GB 922,457* in form of a solution in a liquid polyethylene glycol. The Examiner asserts that by doing so, a person of ordinary skill in the art would expect that the chain transfer agent controls the molecular weight of the graft copolymers and provides for a reduced range of the molecular weight distribution.

However, the Examiner's position neglects to appreciate that a "chain transfer agent" which provides "labile hydrogens" and which therefore terminates the growth of the polymer chain is already present in the reaction mixture of the process of *GB 922,457*, in form of the solid polyalkylene glycols which are applied as starting materials in the process of *GB 922,457*. The solid polyalkylene glycols which are present in the reaction mixture of *GB 922,457* comprise "labile hydrogen atoms", and a low(er) molecular weight polyethylene glycol would not provide hydrogen atoms which are "more labile" than the hydrogen atoms already provided by the starting material of the process disclosed in *GB 922,457*.

While, in the context of *Wu et al.*'s process, the liquid polyethylene glycols are capable of acting as a chain transfer agent by providing for a "more labile hydrogen atom", the same is not applicable where the reaction mixture of *GB 922,457* is concerned. In combination with the solid polyalkylene glycols which are used as starting materials in the process of *GB 922,457* the liquid polyethylene glycols do not provide a "more labile hydrogen atom". In the reaction mixture of the process disclosed in *GB 922,457*, the liquid, low-molecular weight polyethylene glycols are, therefore, not capable of acting as a chain transfer agent. It is therefore immediately apparent to a person of ordinary skill in the art that adding the chain transfer agent taught by *Wu et al.* to the reaction mixture of the process disclosed in *GB 922,457* would not serve any purpose whatsoever.

The explanations of *Wu et al.* with regard to the chain transfer agent are, hence, insufficient to motivate a person of ordinary skill

in the art to effect the modifications of the process in **GB 922,457** which are necessary to arrive at applicants' process. To the contrary, those explanations provide reasons why the process of **Wu et al.** and the process disclosed in **GB 922,457** are not sufficiently closely related. For those reasons alone, a person of ordinary skill in the art is aware that that measures which work in the context of **Wu et al.**'s process cannot be expected to work in a similar manner in the process disclosed in **GB 922,457**. The explanations given by **Wu et al.** therefore support that a person of ordinary skill in the art had no motivation to use a liquid, low molecular weight polyethylene glycol in the process disclosed in **GB 922,457**. Moreover, the explanations of **Wu et al.** support that a person of ordinary skill had no reasonable expectation that adding a liquid, low-molecular weight polyethylene glycol to the mixture reacted in accordance with the process disclosed in **GB 922,457** would serve any useful purpose, let alone would provide for chain transfer and for a control of the molecular weight distribution.

It is well settled that the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and cannot be based on applicant's disclosure<sup>7)</sup>. *"To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references"*<sup>8)</sup>. It is also well settled that the level of skill in the art cannot be relied upon to provide the suggestion to combine references<sup>9)</sup>, and that the mere fact that the prior art can be modified in some manner so as to arrive at a claimed invention does not support a conclusion of obviousness where the prior art fails to suggest the desirability of the specific modification which is necessary<sup>10)</sup>.

Neither the teaching of **GB 922,457** nor the disclosure of **Wu et al.** provide a teaching or suggestion to make the combination which characterizes applicants' process. Additionally, neither one of the

---

7) In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (CAFC 1991)

8) Ex parte Clapp, 227 USPQ 972, 973 (BPAI 1985).

9) Al-Site Corp. v. VSI Int'l Inc., 174 F.3d 1308, 50 USPQ2d 1161, 1171 (CAFC 1999).

10) For example, In re Gordon, 733 F.2d 900, 221 USPQ 1125 (CAFC 1984); see also, eg., Interconnect. Planning Corp. v. Feil, 774 F.2d 1132, 227 USPQ 543 (CAFC 1985).

references provides that the requisite modification could or would serve a useful purpose. Moreover, the reasons presented by the Examiner why a person of ordinary skill in the art would have done what applicants have done, fail to be technically sound. When the teachings of *GB 922,457* and of *Wu et al.* are considered without the benefit of knowledge provided by applicants' invention, there is clearly no reasonable motivation to do what applicants have done, and no reasonable expectation of success. As such, the teachings of *GB 922,457* and of *Wu et al.* are insufficient to render applicants' process prima facie obvious within the meaning of Section 103(a). Favorable reconsideration of the Examiner's position and withdrawal of the rejection is, therefore, respectfully solicited.

In light of the foregoing and the attached, the application should be in condition for allowance. Early action is appreciated.

Please charge any shortage in fees due in connection with the filing of this paper, including Extension of Time fees, to Deposit Account No. 11.0345. Please credit any excess fees to such deposit account.

Respectfully submitted,

KEIL & WEINKAUF



Herbert B. Keil

Reg. No. 18,967

1350 Connecticut Ave, N.W.  
Washington, D.C. 20036  
(202) 659-0100

Encl.: THE LISTING OF CLAIMS (Appendix I)  
THE AMENDED CLAIMS (Appendix II)

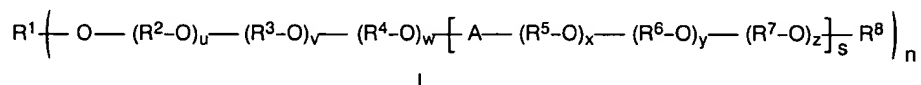
HBK/BAS

## A P P E N D I X I:

THE LISTING OF CLAIMS (version with markings):

1. (previously submitted) A process for preparing graft copolymers of polyvinyl esters which comprises polymerizing

- a) at least one vinyl ester of aliphatic C<sub>1</sub>-C<sub>24</sub>-carboxylic acids in the presence of
- b) polyethers which are solid at room temperature and have the general formula I



in which the variables have the following meaning, independently of one another:

R<sup>1</sup> hydrogen, C<sub>1</sub>-C<sub>24</sub>-alkyl, R<sup>9</sup>-C(=O)-, R<sup>9</sup>-NH-C(=O)-, polyalcohol residue;

R<sup>8</sup> hydrogen, C<sub>1</sub>-C<sub>24</sub>-alkyl, R<sup>9</sup>-C(=O)-, R<sup>9</sup>-NH-C(=O)-;

R<sup>2</sup> to R<sup>7</sup> -(CH<sub>2</sub>)<sub>2</sub>-, -(CH<sub>2</sub>)<sub>3</sub>-, -(CH<sub>2</sub>)<sub>4</sub>-, -CH<sub>2</sub>-CH(CH<sub>3</sub>)-, -CH<sub>2</sub>-CH(CH<sub>2</sub>-CH<sub>3</sub>)-, -CH<sub>2</sub>-CHOR<sup>10</sup>-CH<sub>2</sub>-;

R<sup>9</sup> C<sub>1</sub>-C<sub>24</sub>-alkyl;

R<sup>10</sup> hydrogen, C<sub>1</sub>-C<sub>24</sub>-alkyl, R<sup>9</sup>-C(=O)-;

A -C(=O)-O-, -C(=O)-B-C(=O)-O-, -C(=O)-NH-B-NH-C(=O)-O-;

B -(CH<sub>2</sub>)<sub>t</sub>-, optionally substituted arylene;

n 1 to 8;

s 0 to 500;

t 1 to 12;

u 1 to 5000;

v 0 to 5000;

w 0 to 5000;

x 1 to 5000;

y 0 to 5000;

z 0 to 5000

c) and optionally at least one other monomer

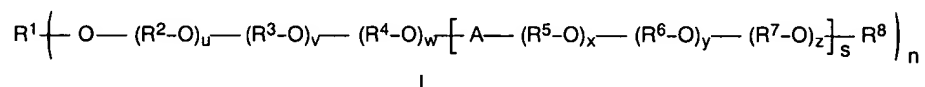
by adding a free-radical initiator system, wherein the free-radical initiator system is a solution of a free-radical initiator in a liquid polyethylene glycol having a molecular weight between 88 and 1000.

2. (previously presented) A process as claimed in claim 1, wherein the solution of the free-radical initiator is added continuously throughout the polymerization reaction time.
3. (previously presented) A process as claimed in claim 1, wherein liquid polyethylene glycol is used as solvent for the free-radical initiator at room temperature.
4. (canceled)
5. (canceled)
6. (canceled)
7. (canceled)
8. (canceled)
9. (canceled)
10. (previously presented) The process of claim 1, wherein the molecular weight of the liquid polyethylene glycol is between 100 and 600.
11. (canceled)
12. (canceled)
13. (canceled)
14. (canceled)
15. (canceled)
16. (canceled)
17. (canceled)

## A P P E N D I X II:

THE AMENDED CLAIMS (clean version):

1. (previously submitted) A process for preparing graft copolymers of polyvinyl esters which comprises polymerizing
- at least one vinyl ester of aliphatic C<sub>1</sub>-C<sub>24</sub>-carboxylic acids in the presence of
  - polyethers which are solid at room temperature and have the general formula I



in which the variables have the following meaning, independently of one another:

R<sup>1</sup> hydrogen, C<sub>1</sub>-C<sub>24</sub>-alkyl, R<sup>9</sup>-C(=O)-, R<sup>9</sup>-NH-C(=O)-, polyalcohol residue;

R<sup>8</sup> hydrogen, C<sub>1</sub>-C<sub>24</sub>-alkyl, R<sup>9</sup>-C(=O)-, R<sup>9</sup>-NH-C(=O)-;

R<sup>2</sup> to R<sup>7</sup> -(CH<sub>2</sub>)<sub>2</sub>-, -(CH<sub>2</sub>)<sub>3</sub>-, -(CH<sub>2</sub>)<sub>4</sub>-, -CH<sub>2</sub>-CH(CH<sub>3</sub>)-, -CH<sub>2</sub>-CH(CH<sub>2</sub>-CH<sub>3</sub>)-, -CH<sub>2</sub>-CHOR<sup>10</sup>-CH<sub>2</sub>-;

R<sup>9</sup> C<sub>1</sub>-C<sub>24</sub>-alkyl;

R<sup>10</sup> hydrogen, C<sub>1</sub>-C<sub>24</sub>-alkyl, R<sup>9</sup>-C(=O)-;

A -C(=O)-O-, -C(=O)-B-C(=O)-O-, -C(=O)-NH-B-NH-C(=O)-O-;

B -(CH<sub>2</sub>)<sub>t</sub>-, optionally substituted arylene;

n 1 to 8;

s 0 to 500;

t 1 to 12;

u 1 to 5000;

v 0 to 5000;

w 0 to 5000;

x 1 to 5000;

y 0 to 5000;

z 0 to 5000

- and optionally at least one other monomer

by adding a free-radical initiator system, wherein the free-radical initiator system is a solution of a free-radical initiator in a liquid polyethylene glycol having a molecular weight between 88 and 1000.



2. (previously presented) A process as claimed in claim 1, wherein the solution of the free-radical initiator is added continuously throughout the polymerization reaction time.
3. (previously presented) A process as claimed in claim 1, wherein liquid polyethylene glycol is used as solvent for the free-radical initiator at room temperature.
10. (previously presented) The process of claim 1, wherein the molecular weight of the liquid polyethylene glycol is between 100 and 600.